

**From:** [Tobin, Jennifer](mailto:Tobin, Jennifer)  
**To:** [rpenfield@firstenergycorp.com](mailto:rpenfield@firstenergycorp.com)  
**Cc:** [Lashley, Phil H \(EH\)](#); [McCreary, Dave M \(EH\)](#)  
**Subject:** Verbal Relief for Penetration Evaluation and Hot Leg Nozzles - Delivered 4/9/2020 at 10:00 am  
**Date:** Thursday, April 09, 2020 10:21:00 AM

---

Good morning Mr. Penfield,  
Please find below a written documentation of the verbal relief that NRC provided this morning (4/9/2020). This email will be made publicly available.

Participants:

**Energy Harbor**

Mark Manoleras  
Brandon Padgett  
Perry Seaman  
Jeff Morgan  
Kathy Nevins  
Phil Lashley

**NRC**

Matt Mitchell  
Jim Danna  
John Tsao  
Jenny Tobin

Please contact me with questions or concerns.

Thanks!  
-Jenny

VERBAL AUTHORIZATION BY THE OFFICE NUCLEAR REGULATION  
10 CFR 50.55a REQUESTS 2-TYP-4-RV-06 AND 2-TYP-4-RV-07  
ALTERNATE EXAMINATION OF  
HOT LEG DISSIMILAR METAL BUTT WELDS AND  
BOTTOM MOUNTED INSTRUMENTATION PENETRATIONS  
BEAVER VALLEY POWER STATION, UNIT 2  
ENERGY HARBOR NUCLEAR CORPORATION  
DOCKET NO. 50-412  
EPID L-2020-LLR-0053 AND L-2020-LLR-0054  
APRIL 9, 2020

**Technical Evaluation read by Matthew Mitchell, Chief of the Piping and Head Penetration Branch, Office of Nuclear Reactor Regulation**

By letter dated April 3, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML20093E657 and ML20094G936), Energy Harbor Nuclear Corporation (the licensee), requested alternatives to the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, Code Cases N-722-1 and N-770-2 for Beaver Valley Power Station, Unit 2 (Beaver Valley, Unit 2).

For pressurized water reactors, Title 10 of the Code of Federal Regulations (10 CFR) 50.55a, paragraph 10 CFR 50.55a(g)(6)(ii)(E) mandates the use of ASME Code Case N-722-1 to perform a bare metal visual inspection of the hot leg Alloy 82/182 dissimilar metal butt welds every refueling outage and bottom mounted instrumentation (BMI) penetrations every other refueling outage. Paragraph 10 CFR 50.55a(g)(6)(ii)(F)

mandates the use of ASME Code Case N-770-2 to perform a bare metal visual inspection of unmitigated hot leg Alloy 82/182 dissimilar metal butt welds every refueling outage and a volumetric inspection every second refueling outage.

The licensee submitted Request 2-TYP-4-RV-06 to eliminate the bare metal visual examination in the unit's Spring 2020 refueling outage (2R21) for the three dissimilar metal butt welds: 2RCS-REV21-N-24, 2RCS-REV21-N-26, and 2RCS-REV21-N-28, which join the reactor vessel nozzles to the safe ends of the hot legs. Also, the licensee submitted Request 2-TYP-4-RV-07 to defer the bare metal visual examination of the unit's reactor vessel BMI penetrations from the Spring 2020 refueling outage to the Fall 2021 refueling outage (2R22).

On March 13, 2020, the President of the United States declared a national emergency due to the spread and infectious nature of the Coronavirus-2019 (COVID-19) virus and resulting pandemic. The Centers for Disease Control and Prevention (CDC) recommends for social distancing by maintaining approximately six feet from other personnel to limit the spread of the virus. On March 28, 2020, the Governor of Pennsylvania issued a Stay-at-Home order for Beaver County and the surrounding counties of Allegheny and Butler.

The licensee stated that the above specified examinations require construction personnel to open hatches in the floor of the refueling cavity, install temporary lighting, remove neutron shield material, and remove insulation. Additional contract and onsite staff are required to perform radiological surveys and the weld examinations. Because of the rapid spread and infection rates of the virus, the licensee anticipates challenges to maintain staff levels throughout the outage and is requesting relief where appropriate to reduce necessary staff.

Therefore, to minimize the COVID-19 pandemic affecting plant personnel, the licensee submitted these two alternative requests pursuant to 10 CFR 50.55a(z)(2) on the basis that complying with the inspection requirements of Code Cases N-722-1 and N-770-2 would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. The NRC staff determines that to minimize the plant personnel from COVID-19, the licensee's hardship justification is acceptable.

Further, in regards to evaluating whether the request alternative provides for reasonable assurance of adequate protection, the NRC staff finds that the licensee has previously inspected the subject welds and BMI penetrations in accordance with both code cases and has not identified any indications in these components. The NRC staff notes that the material used in the subject welds and BMI penetrations has sufficient fracture toughness to resist sudden crack propagation. If a flaw does occur during normal operation, the likely scenario is that the flaw will grow slowly to become 100 percent through wall in a localized location, and a leak will occur rather than a catastrophic failure. The NRC staff finds that should a leak occur in the subject components, the licensee's integrated leakage monitoring program can detect a leak rate as low as 0.1 gallons per minute (gpm).

The licensee stated that the reactor coolant system (RCS) Integrated Leakage Program includes the requirement to identify the leakage source and could include entering containment to identify the source. If the leakage is found and isolated, the licensee will re-perform an RCS leak rate calculation to confirm that the leakage has been addressed. Depending on the source identified, a shutdown could be required in accordance

with Limiting Condition for Operation (LCO) 3.4.13 in the plant Technical Specifications which limits unidentified leakage to 1 gpm. In addition, the licensee has implemented administrative limits to ensure that leakage will not challenge the 1 gpm limits. The licensee further stated that during operation, an increase in radiation levels within containment would be noted if there were significant leakage.

Based on industry operating experience, the NRC staff finds that a flaw that causes a leak rate of 0.1 gpm would be small and would not challenge structural integrity of either the subject welds or BMI penetrations.

The licensee stated that the general area around and below the reactor vessel will be examined as part of the pressure test program walkdown during Mode 3 start up after completion of the Spring 2020 refueling outage. The licensee further stated that any leakage identified would be investigated to determine the source. The NRC staff notes that the licensee's pressure test is consistent with the ASME Code, Section XI, IWA-5000 which requires a VT-2 visual examination associated with the system leakage test of the Class 1 pressure-retaining components. The NRC staff notes that VT-2 visual examination is not as effective as the bare metal visual examination as required by N-722-1 and N-770-2 but is reasonable compensatory measure.

The NRC staff finds reasonable assurance that structural integrity of the subject welds and BMI penetrations will be maintained because (1) the subject welds and BMI penetrations have not shown indications in the past inspections, (2) the licensee's integrated leakage monitoring program has the capability of detecting 0.1 gpm, (3) the licensee has administrative leakage limits with associated actions to ensure leakage will not reach Technical Specification limits, (4) the fracture toughness of the material will resist uncontrollable flaw propagation, and (5) the licensee will perform a system leakage test at the end of Spring 2020 refueling outage.

**Authorization read by James G. Danna, Chief of the Plant Licensing Branch I, Office of Nuclear Reactor Regulation**

As Chief of the Plant Licensing Branch I, Office of Nuclear Reactor Regulation, I agree with the conclusions of the Piping and Head Penetration Branch.

The NRC staff concludes that Requests 2-TYP-4-RV-06 and 2-TYP-4-RV-07 will provide reasonable assurance of structural integrity of subject hot leg welds and BMI penetrations until the next scheduled bare metal visual examinations to be performed in the Fall of 2021. The NRC staff finds that complying with the requirements of the ASME Code, Section XI, Code Cases N-722-1 and N-770-2 would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all the regulatory requirements set forth in 10 CFR 50.55a(z)(2). Therefore, effective April 9, 2020, the NRC authorizes the use of Requests 2-TYP-4-RV-06 and 2-TYP-4-RV-07 at Beaver Valley, Unit 2 until the next scheduled refueling outage 2R22 in the Fall of 2021.

All other requirements in ASME Code, Section XI, 10 CFR 50.55a(g)(6)(ii)(E) and 10 CFR 50.55a(g)(6)(ii)(F) for which relief was not specifically requested and approved in these two requests remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

This verbal authorization does not preclude the NRC staff from asking additional clarification questions regarding the proposed alternative while subsequently preparing the written safety evaluation.